

COURSE OUTLINE

1. GENERAL

SCHOOL	Agricultural Sciences		
ACADEMIC UNIT	Animal Production, Fisheries & Aquaculture		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	AS_801	SEMESTER	8 th
COURSE TITLE	Fish Culture		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		5 (3h-lectures + 2h lab. training)	7
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special background		
PREREQUISITE COURSES:	Aquaculture		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

2. LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>The student, at the end of the relevant Learning Process, is in a position:</p> <p>To understand the adaptation needs of each fish species in farming systems.</p> <p>To use the appropriate species of fish breeding existing literature.</p> <p>To organize the farming plan of a certain fish farming.</p> <p>To record and explain the concentration of oxygen in the water.</p> <p>To record and understand the importance of the main parameters of water quality in</p>

aquaculture (Temperature, Oxygen, Salinity, pH, NO₃, NO₂, NH₄).

To handle the feeding of farmed fish by hand and the main types of automatic feeders.

To use computerized feeding systems.

To control the behavior of fish during feeding (hunger, saturation).

To apply methods for estimating fish growth.

To apply methods to assess mortality.

To apply preventive measures to prevent disease.

To control the use of resources (food, oxygen, energy, etc.) in production.

To be aware of the principles of managing each fish farm in accordance with environmental legislation.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and

sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

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Others...

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Respect for the natural environment

Decision making

Autonomous work

Teamwork

Application of knowledge

Search, analyze and synthesize data and information, using the necessary technologies

Adapt to new situations

3. SYLLABUS

1. The basic elements of physiology and metabolism of farmed fish. Glossary.
2. Anatomy of the main farmed fish.
3. Aquaculture of fresh warm water fish, fresh cold water fish,
4. Aquaculture of fish of salty warm water, saltwater cool water.
5. Open - closed rearing system.
6. Fish cages.
7. The production of the fry in the fish farms.
8. Nourishment of cultivated organisms. Food management and metabolic needs of fish. Estimation of growth and other breeding performance.
9. Basic aquaculture equipment.
10. The basic and critical physicochemical parameters. Water quality. Cleaning and disinfection of water treatment equipment and systems.
11. Basic principles of management of farms.
12. Methodology for estimating pollution from fish farms.
13. Handling salinity. Measurement of oxygen levels in water and parameters of water quality (Temperature, Oxygen, Salinity, pH, NO₃, NO₂, NH₃). Calculation of water and air

supply.

Laboratory exercises

1. Examination of the basic anatomy of standard breeding fish.
2. Measurement of the basic body sizes of farmed fish.
- 3, 4, 5, 6, 7, 8. Individual student fish rearing in the laboratory and their relevant work.
9. Study and maintenance of mechanical filters for water purification.
- 10, 11, 12. Study and maintenance of biological filters in a closed breeding system.
13. General design of a closed rearing system.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	ICT in teaching and communication with students	
TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Activity	Semester workload
	1. Lectures 3 hours x 13 weeks.	39
	2. Further study, search and study of lecture material, associated with (1) (3 hours x 13 weeks)	39
	3. Laboratory Exercises 2 hours x 13 weeks.	26
	4. Writing of brief reports of laboratory exercises or laboratory examination related to (3) (1 x 6 hrs)	6
	5. Self-assessment exercises in e-class (1 x 6 weeks)	6
	6. Writing of short work presentation (1 x 13 weeks)	13
	7. Hours of study and preparation for laboratory exercises, assessment of progress (s) and final examination	43
8. Final examination	3	
	Course total	175
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure Language of evaluation, methods of</i>	<ul style="list-style-type: none"> • Greek (Teaching, Examination) • English (Teaching, Exam) 1. Solving Problems Based on Learned (Formative -	

<p><i>evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Concluding) (A) 2. Report / Report (Concluding) (B) 3. Written Final Examination (Concluding) (C) Each case is graded on a scale of 0-10 Final Grade (TB): $0.3A + 0.2B + 0.5C$ C takes place during the current exam period, which is taught in the course and its iteration (September) (period where A, B & C scores are maintained). In case of failures of the course the student repeats the educational process.</p>
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4. ATTACHED BIBLIOGRAPHY

Suggested Bibliography:

- Voultziadou E., Abatzopoulos Th., Antonopoulou E., Gania, K., Gelis S., Staikou A., Triantafyllidis A. 2015. AQUACULTURE - Organizations, production systems, prospects. SEAV, ISBN: 978-960-603-184-7.
- FAO, 2015. Global Aquaculture Production. Available: <http://www.fao.org/fishery/statistics/global-aquaculture-production/en>.
- FAO, 2014. The State of World Fisheries and Aquaculture. Rome, FAO, 197p.
- FAO, 2015. Cultured Aquatic Species Information Program, Aquaculture Fact Sheets. In: FAO Fisheries and Aquaculture Department [online]. Rome. Available: <http://www.fao.org/fishery/culturedspecies/search/en>.
- Hotos, G. 2016. Fish, Water and Aquaculture. TEI Of Western Greece, Department of Fisheries-Aquaculture Technology.

Related scientific journals:

- Aquaculture
- Fisheries Research

